MAINTENANCE MANUAL

- ***Preventive maintenance***
- ***Alarms and messages***

CNC FANUC 18i-21i

Edition : ***M.M. 03*** *Date :* ***01.09.01*** *Code:* ***T140-00157***

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Please carefully read this maintenance manual and follow the instructions and suggestions therein, well aware that by doing this you improve reliability and productivity of your machine substantially cutting down running costs.

Modifications

Date	*Chapter*	*Paragraph*	*Description*
01-07-00	1. 2. 3. 4.		Chapters on preventive maintenance added
01-09-00	4.		Routine maintenance timetable up-dated
01-09-01	6. 7. 8.		Alarms and messages updated
01-09-01	9.		Batteries replacement procedure added

SENDER

To.
Officine E. BIGLIA &C S.p.A.
Spare parts service

Fax : 0141 783227
e-mail : biglia@bigliaspa.it

ORDER No. **DATED**

For any queries please contact or Purchase manager

Mr. :

We are hereby ordering spare parts for the machine identified herebelow:

MACHINE MODEL :

SERIAL NUMBER :

YEAR OF MANUFACTURE :

as detailed in the following list

Quantity	CODE	DESCRIPTION	Issue/Title of Manual referred to for part code

at the following conditions (subject to BIGLIA's acceptance) **:**

- Shipping instructions **:……**

- Delivery time **:……**

- Payment conditions **:……**

- Delivery to Messrs. **:……**
(full address)
……

Your faithfully

date :……Signature (in clear letters)……

ORDER FORM

1. TECHNICAL ASSISTANCE AND SPARE PART SERVICE - ITALY-

1.1 Technical service

E.B.S. : ELECTRONIC BIGLIA SERVICE s.r.l.
Via Martiri della Libertà N° 31 -14045 INCISA SCAPACCINO (ASTI) ITALY-

The company entrusted with the after-sale technical service to BIGLIA machine tools. E.B.S. is the operative center where BIGLIA engineers are available every working day of the week. It receives the first telephone call and supplies, whether directly or indirectly, any intervention required to allow the user customer keep its lathe in good operating conditions.

The service is carried out by E.B.S. engineers only, every working day of the week.

Telephone call hours:
Morning : from 08.00 to 12.00 Afternoon : from 13.30 to 17.30
TEL : 0141747025 FAX : 0141783327
(3 lines with action finding)

1.2 Spare part service

Spare part service is ensured by BIGLIA engineers who are available on the phone every working day of the week in the following hours:

Telephone call hours:
Morning : from 08.00 to 12.00 Afternoon : from 13.30 to 17.30

To order BIGLIA one or more spare parts :

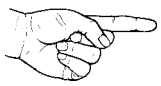
-make a copy of and fill in the form of page 4 an send it by fax to
or send an **e-mail** to:
Officine E. BIGLIA & C. S.p.A. -SPARE PARTS SERVICE-
FAX. : 0141783327
e.mail : biglia@bigliaspa.it

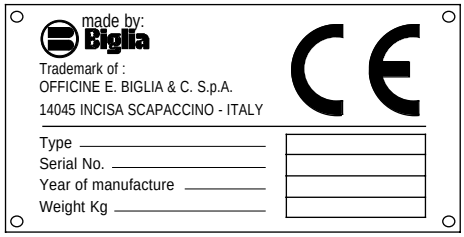
with the following data:

- MACHINE MODEL

- SERIAL NUMBER

- YEAR OF MANUFACTURE

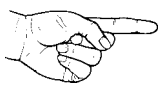




taking them from the EC plate

- SPARE PART CODE AND NAME

- QUANTITY



- MANUAL ISSUE/TITLE

data taken from BIGLIA's Manuals

- SHIPPING INSTRUCTIONS
- DELIVERY TIME
- PAYMENT CONDITIONS

Our staff will contact you for any clarifications if required.

2. TECHNICAL ASSISTANCE AND SPARE PART SERVICE

- EUROPE AND THE REST OF THE WORLD -

The service is ensured by the engineers of BIGLIA's authorized dealers.

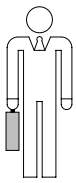
Every dealer keeps a store of the main spare parts and has a team of mechanical and electronic engineers who regularly attend up-dating courses at BIGLIA's.
Technicians and spare parts are proportional to the number of machines installed in the country.

In all cases BIGLIA ensures technical and spare part service to every user of CNC BIGLIA lathes.

3. SAFETY RULES

BIGLIA's lathes are designed and manufactured to guarantee maximum safety.
Nobody is allowed to touch to mechanical, electrical and electronic parts unless he has been duly trained by specialized engineers, knows the current safety rules and has carefully read BIGLIA manuals.

The personnel entrusted with machine maintenance is identified as "MAINTENANCE MAN".



The maintenance man, beside being professionally prepared for his task, must read the manuals paying special attention to the safety rules and the chapters dealing with maintenance.

Warning

Prior to carrying out any maintenance operation on a BIGLIA lathe, make sure electrical, hydraulic and air supplies are cut off.

When carrying our visual checks on moving parts take care to stand clear of the moving part.

Since all components used on BIGLIA lathes are made to safety criteria and in compliance with -EC- provisions they should not be removed without first consulting BIGLA "E.B.S." technical service.

4. PREVENTIVE MAINTENANCE

Accurate maintenance is important to maintain the lathe in ideal working conditions.
This is why BIGLIA recommends a number of general inspections, checks and routine maintenance operations applicable to all BIGLIA lathe models.

Please do not consider recommended checks on parts or components your machine is not equipped with.

The Maintenance Tables below specify the item to check, how often to check it, and how to carry out the check; specific accessories and equipment which are not part of the standard machine are not included which does not mean they don't need checks and inspections.

If during a preventive maintenance operation the need arises to repair or replace any components, these should be repaired or replaced at once or within the shortest possible delay.

For your preventive maintenance to be easily done and effective carefully perform the operations according to the Tables below.

DAILY

Grease chuck

Grease the jaws with special grease (about 5 grams to grease the three jaws).

Check oil level in the hydraulic station

Visual control.

Check pressure gauge on hydraulic station

Visual control.

Check for oil or coolant leaks

Visual control.

Check air circuit (by means of a pressure gauge)

Visual control.

Check oil level in the lubrication unit

Visual control.

Clean machine work area

Remove excess of accumulated swarfs particularly in the movable guards area.

EVERY 50 HOURS

Guide oil collecting pan

Empty the pan before exhausted oil fills it up.

N.B. : Recovered oil contains impurities do not use it in the guide lubrication unit to avoid damaging the machine.

Clean sliding door rails

Remove any swarfs preventing door opening, grease upper guide as needed (do not use compressed air to clean).

Electrical cabinet filter

Take down the filtering element and clean it using compressed air.
Replace if soaked with oil.

Oil leaks

check station, delivery pipes and solenoid valve bases.

Visual control.

Air pressure

check sliding valve, pressure gauge, pressure reducer and check for any leaks.

Visual control and manual operations.

Coolant or swarfs collecting container

Clean with the machine off (do not use compressed air to clean).

Check and replace guide covers

Clean and check the telescopic cover for unimpeded sliding.
If scraper ring lips are worn or damaged call for Technical service assistance.

Change oil in hydraulic station for axis lubrication

See “OPERATOR’S MANUAL”.

EVERY 500 HOURS

Motor spindle cooling

With machines equipped with motor spindle check coolant level in the radiator.
Clean off dust and impurities from radiator.
See “SPINDLE CHILLER MANUAL”.

Front door micro switch

Clean key and dowel, check for alignment, lightly grease the guide pin.

Travel end micro switch on hydraulic cylinder

Remove cover, clean, check for correct functioning; check micro switch cables for proper fastening, functioning and good conditions.

Oil draining from chuck cylinder

Remove cover if necessary, make sure oil drains from the drain pipe and check this for leaks.
With lathes fitted with a sub-spindle, carryout the same check on the sub-spindle.

Spindle motor belts

Check belts for tension and wear, remove any swarfs and clean off oil.
If there is oil on the belts there is a leak somewhere to look for; oil cuts down belt life.

Hydraulic chuck

Use the dynamometer provided to check that the clamping force of the chuck is actually that recommended by the manufacturer.

Coolant tank

Take out and clean.

Tool coolant filter

Take down and clean the filter taking care not to spill any coolant on the floor.
N.B.: the 500 hour cleaning interval is given as a guide only and should be adjusted to the type of material processed.

Clean air system filter

Drain through bleed tap (see “OPERATOR’S MANUAL”).

EVERY 500 HOURS

Operator's panel functioning

Use individual controls to check all push-buttons, selector switches, hand-wheels, etc. for correct operation. Check warning lights (bulbs and LEDs) (see "Operator's Manual").

Clean tank filter of guide lubrication oil

See "OPERATOR'S MANUAL".

Clean or replace electrical cabinet filters

When the filter is soaked with oil replacement is recommended to allow a good transpiration of the panels which ensures a flow of fresh air to all electrical and electronic components.

Clean CNC's and Operator's keyboards

With the machine off, clean with a cloth soaked in alcohol.

Clean coolant radiator of the motor spindle

With the machine off, clean the cooling fins blowing compressed air (max. 8 atm.) through them and outward.

EVERY 1000 HOURS

Swarf conveyor: cleaning and inspection

Remove any swarfs from the conveyor, inspect paddles, side chain links and guards/ sheets are not deformed or detached.
Make sure the safety micro is properly set and firmly fastened.

Cooling emulsion

Check water-oil ratio, check preservation of the emulsion and replace as needed.
Before pouring the new emulsion accurately clean the tank.
The life of the emulsion varies depending on the oil used and on the use.
Always consult your supplier.

Guide lubrication unit: general inspection

Check main delivery line and first distribution unit for leaks.
Clean oil infeed filter
Clean the see-through plastic container if there are deposits in it.

Guide guard

X and Z axes: remove any swarfs and grease.
B axis: take it off on the sub-spindle or tailstock side, clean and remove swarfs, then grease.

Machine leveling

This should be checked using the tools and following the procedure described in the User's Manual.
If the machine works with the feed bar, check the alignment also.

Turret geometry

Check alignment of tool holding-plate face, check concentricity of boring-bar bore with spindle axis. (Carry out these checks on position No.1, with no tools mounted).

Turret with driven tools

Check for tension and wear; clean toothed belt.
Check noise when rotating.
Check positioning and fastening of belt presence micro switch.
Check drawing gear, spring cleanliness and elasticity.
Check for hydraulic oil leaks.

Noise when tools rotate

Grease bearings; if noise persists replace bearings.

Turret clearance

Check stiffness of turret clamping and relative clearance.

EVERY 1000 HOURS

Turret rotation

Check how fast and how uniform turret rotation is in both directions.

Spindle alignment with Z slide (for B1000 and B201/F models only)

This can be checked using a special BIGLIA device.

Spindle: general inspection

Check spindle nose for roundness and wobbling.
Check abnormal vibrations and noise when rotating at low, average and high speed.
Check sliding of piston controlling chuck clamping operation (use 6 bar pressure).
Carry out all the checks above on sub-spindle, too.

Check recirculating ball bearings and linear guides

Remove the covers through which bearings and linear guides can be visually inspected.
Thoroughly clean bearings, guides and sliding shoes sucking out swarfs as needed.
Check sliding shoe and bearing lubrication.
Check motor-bearing joint, too.
If possible check bearing noise and vibrations before mounting covers back in position.

Replace guide scraper ring

See “SPARE PARTS MANUAL”.

Axes limit switch

Clean off swarfs and coolant. Check wiring and electrical connector.
Check functioning.

Connectors of all axis, spindle and driven tool motors

First check cleanliness on the outside (if dirty disconnect and clean).
Then check fastening.

Chuck and gripper body

Take down and clean (follow the instructions of the clamping equipment manufacturer).

Hydraulic cylinder

Disassemble and clean, check functioning and oil leaks.

Hydraulic station

Disassemble and clean tank, replace filter.

EVERY 1000 HOURS

Overload relay

Check for efficiency.

Brake pad wear

Check C axis disc brake pads for wear, replace as needed.
A slightly worn brake disc does not impair good operation.

Hydraulic station heat exchanger

With the machine off, clean the cooling fins blowing compressed air (max. 8 atm.) through them and outward.

Clean electrical cabinet inside

Clean with the machine completely off.

Clean cooling fans

With the machine off, take down the fans (if necessary) and clean them.

Check relays

Visual control in the electrical cabinet.

Hydraulic oil temperature

Check oil temperature placing a probe inside the hydraulic station
Max. recommended temperature around 50°C.
When oil temperature is constantly above 60° due to intensive work cycles or ambient temperature, stop the machine and contact BIGLIA technical service (E.B.S.).
If after all necessary controls temperature remains above 60°, it will be your care to fit the machine with an oil cooling system.

Speed change

Check oil level in the main spindle speed change.
Top up following the instructions of the manufacturer, as needed.

Cracks in or stiffness of flexible pipes

Carefully inspect all flexible and movable pipes for wear or cracks.

Electrical cables

Carefully check all movable electrical cables for wear or cracks.

EVERY 2000 HOURS

Gib adjustment

With machines equipped with flat guides, check reversing errors; if the clearance is too large, adjust the tapered gib (contact E.B.S. Service).

Spindle encoder belt

Check for tension and wear, replace if worn out.

Driving belt for main spindle and sub-spindle

Check for tension and wear, replace if worn out.

Electrical cabinet air conditioning system

Check it works properly.

Check electrical cabinet's air-conditioner or heat exchanger

Place a thermometer inside the cabinet, have a lathe work for about one hour, then check the temperature inside the cabinet - this should not exceed 36°C.
This check is required when outside temperature is around 30°,
(at lower temperatures there is no need to carry out the check).

Cleaning of the labyrinth flange for spindle protection

Take off the clamping device from the spindle nose.
Take off the clamping device flanges, if required.
Take off the flange for spindle protection and clean it.
P.N. : do not use compressed air or coolant on the spindle nose.

EVERY 3000 HOURS

Motor fans

Take down motor fans and clean thoroughly.

Relays

Check a24V relays and replace them.

Feed bar

Check feed bar for leveling and alignment.

Hydraulic station

Change oil: for viscosity follow what prescribed in Biglia User's Manual

EVERY YEAR

Batteries

When replacing batteries on the CN and on the ß motor drive turret use genuine FANUC components.
See procedure described on next pages.

EVERY 5000 HOURS

Spindle bearings

Check bearings for noise, vibrations and temperature; replace as needed (contact E.B.S. service).

EVERY 15000 HOURS

Sliding shoes and recirculating ball bearings

Check plays, reversing errors, noise and vibrations; replace the part as needed (contact E.B.S. Service).

BIGLIA Turret

Carry out a general overhaul, replacing gaskets and any other worn part (contact E.B.S. Service).

5. INSTRUCTIONS FOR ALARM IDENTIFICATION

When "ALARM" is displayed on the CRT screen

- if the alarm number **is between 1000 and 1999**

  this means the alarm regards the machine

- if the alarm number **is between 2000 and 2999**

  this means a message covering the machine is displayed

- For different alarms consult FANUC Operator’s Manual

  appendix "**G**"

REMEDIES

- check the type of alarm and clear it reading the instructions.
- press RESET and start again.
- if alarm is not cleared even pressing RESET, switch off the machine,

  wait 10-15 sec., then switch on the machine and start again.

NOTE

The alarm message may be displayed on two different screen pages:

-- the first page is that of the alarm,

-- the second page that of the operator's message, that can be selected by means of "SOFT" key.

In case of alarm, it is advisable to always check the page of operator's message.

6. ALARM LIST

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650		
		+	+		+	+		+	1001	TURRET ENCODER PARITY ERROR
+	+			+			+		1001	TURRET DRIVE ALARM
+	+	+	+	+	+	+	+	+	1002	TOOL NOT FOUND
+	+	+	+	+	+	+	+	+	1003	WRONG TOOL NUMBER
+	+	+	+	+	+			+	1004	DOOR MICROSWITCH INTEGRITY VERIFICATION
							+		1004	PARTS-CATCHER DRIVE ALARM
+	+	+	+	+	+	+	+	+	1005	TURRET UNLOCKED
+	+	+	+	+	+	+	+	+	1007	MACHINE TOOL OFF
+	+	+	+	+	+		+	+	1008	BAR FEEDER ALARM
+	+	+	+	+	+	+	+	+	1009	DEFECTIVE LUBRICATION
+	+	+	+	+	+	+	+	+	1010	DOOR OPEN
+	+	+	+	+	+	+	+	+	1011	HYDRAULIC UNIT THERMAL SWITCH
+	+	+	+	+	+	+	+	+	1012	COOLANT PUMP THERMAL SWITCH
+	+	+	+	+	+	+	+	+	1013	SWARF CONVEYOR THERMAL SWITCH
+	+	+	+	+	+	+	+	+	1014	COLLET OPEN
+	+	+	+	+	+	+	+	+	1015	SPINDLE ALARM
+	+	+	+	+	+		+	+	1016	TAILSTOCK OVERTRAVEL
+	+	+	+	+	+			+	1017	FUNCTION -M- NOT ENDED
						+	+		1017	DEFECTIVE AIR PRESSURE
+	+	+	+	+	+	+	+	+	1018	TOTAL MACHINED PARTS
+	+	+	+	+	+	+	+	+	1021	LUBRICATION PRESSURE OPERATE CUT-OFF SWITCH DEFECTIVE
+	+	+	+	+			+	+	1025	CYCLE TIME EXCEEDED
+	+	+	+	+	+	+	+	+	1028	DRIVE THERMAL SWITCHES
+	+	+	+	+	+	+	+	+	1030	HYDRAULIC PRESSURE LOW
							+		1031	Y-AXIS UNLOCKED
+		+			+				1038	TAILSTOCK UNLOCKED
+	+	+	+	+	+		+	+	1040	COLLET QUILL OVERTRAVEL
	+		+	+	+	+	+	+	1042	ALARM LIVE TOOLING
+	+	+	+	+	+			+	1043	SPEED CHANGE NOT OCCURRED
	+		+	+	+			+	1047	SUB-SPINDLE ALARM

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650		
							+		1048	DOOR MICROSWITCH INTEGRITY VERIFICATION
	+		+	+	+			+	1049	TOOL BELT BROKEN
							+		1050	FUNCTION -M- NOT ENDED
		+	+		+	+		+	1051	TURRET STROBE SIGNAL DEFECTIVE
							+		1052	TOOL BELT BROKEN
		+	+		+	+		+	1053	WANTED POSITION EXCEEDED
	+		+	+	+	+	+	+	1056	LIVE TOOL NOT ORIENTED
					+				1057	TAILSTOCK PRESSURE DEFECTIVE
							+		1057	PARTS-CATCHER LIMIT SWITCH DEFECTIVE
					+				1058	COLLET PRESSURE OUT-OF-RANGE
+	+	+	+	+				+	1059	COOLANT DEFECTIVE
						+	+		1059	COLLET PRESSURE DEFECTIVE
	+		+	+				+	1060	ELECTRICAL SPINDLE COOLING THERMAL SWITCHES
						+	+		1060	LEFT COOLANT DEFECTIVE (HEAD 1)
						+			1061	UNCLAMPED WORKPIECE
	+		+	+				+	1061	ELECTRICAL SPINDLE COOLING ANOMALY
							+		1062	B-AXIS NOT CORRECTLY POSITIONED
								+	1063	PIECE NOT FOUND
								+	1067	TURRET DRIVE ALARM
								+	1068	AIR PRESSURE DEFECTIVE
							+		1081	TURRET 2 DRIVE ALARM
						+			1081	TURRET 2 ENCODER PARITY ERROR
						+	+		1082	TURRET 2 TOOL NOT FOUND
						+	+		1083	TURRET 2 WRONG TOOL NUMBER
						+	+		1085	TURRET 2 UNLOCKED
						+			1090	TURRET 2 DOOR OPEN
							+		1094	SUB-SPINDLE COLLET OPEN
						+			1094	HEAD 2 COLLET OPEN
							+		1095	SUB-SPINDLE ALARM
						+			1095	TURRET 2 SPINDLE ALARM

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650		
						+			1098	HEAD 2 TOTAL MACHINED PARTS
						+	+		1122	HEAD 2 LIVE TOOLING ALARM
						+	+		1131	TURRET 2 STROBE SIGNAL DEFECTIVE
							+		1132	HEAD 2 TOOL BELT BROKEN
						+			1133	HEAD 2 WANTED POSITION EXCEEDED
						+	+		1136	TURRET 2 LIVE TOOL NOT ORIENTED
						+			1139	HEAD 2 COLLET PRESSURE DEFECTIVE
							+		1139	SUB-SPINDLE COLLET PRESSURE DEFECTIVE
						+	+		1140	HEAD 2 COOLANT DEFECTIVE
						+			1141	HEAD 2 UNCLAMPED WORKPIECE
							+		1141	SUB-SPINDLE UNCLAMPED WORKPIECE

6.1 Detailed description of alarms series "1000"

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
		+	+		+	+		+	**1001 TURRET ENCODER PARITY ERROR** Cause: Signals transmitted by turret sensors are not correct. Effect: Cycle stops automatically in HOLD mode. Remedy: Turret has to be positioned again in MDI mode. Note: If trouble occurs again, contact BIGLIA Service (encoder may be faulty).
+	+			+			+		**1001 TURRET DRIVE ALARM** Cause: Alarm condition of the turret indexing drive, or a loss of parameters due to battery defective. Effect: Machine stopped with alarm on. Note: Check on the drive display the type of alarm and follow instructions of Annexe (1) based on the number displayed.
+	+	+	+	+	+	+	+	+	**1002 TOOL NOT FOUND** Cause: Tool change was not completed within 5 seconds (max. allowed time). Effect: AUTOMATIC cycle stops in HOLD. Remedy: Check if turret can rotate without crashing against machine components. Position turret again in MDI mode. Note: If trouble occurs again, contact BIGLIA Service (turret encoder and/or turret limit-switch or indexing solenoid may be faulty).
+	+	+	+	+	+	+	+	+	**1003 WRONG TOOL NUMBER** Cause: A wrong tool number has been entered (a T value higher than available positions on tool-holding plate has been programmed). Effect: AUTOMATIC cycle stops Remedy: Check if Technological Program contains any mistake.
+	+	+	+	+	+			+	**1004 DOOR MICROSWITCH INTEGRITY VERIFICATION** Cause: After switching off the electric equipment, when switching on again the integrity of the "door closed" microswitch should be checked . Effect: Warning alarm. Remedy: Close and re-open door. Note: If the alarm persists, this means that the 'door closed' limit switch does not work properly. It does not close or is always closed.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
							+		**1004 PARTS-CATCHER DRIVE ALARM** Cause: Alarm condition of the partss-catcher drive, or a loss of parameters due to battery defective. Effect: Machine stopped with alarm on. Note: Check on the drive display the type of alarm and follow instructions of Annexe (1) based on the number displayed.
+	+	+	+	+	+	+	+	+	**1005 TURRET UNLOCKED** Cause: Turret is not locked properly. Limit switch may be faulty or mechanical locking may be defective. Effect: AUTOMATIC cycle stops in HOLD. Remedy: Position turret again in MDI mode (the first attempt is sometimes not successful; try again and call T values which are distant from the present position). Nota: If trouble occurs again, contact BIGLIA Service. The alarm may appear together with "1002 tool not found".
+	+	+	+	+	+	+	+	+	**1007 MACHINE TOOL OFF** Cause: Machine auxiliary circuits are off. Effect: Machine EMERGENCY. Remedy: Switch on auxiliary circuits by pressing push-button POWER ON. Note: If only alarm 1007 appears, it means that machine was switched off by an operator (for instance) who has pressed the emergency push-button; if this alarm appears together with another alarm, it means that a serious fault caused machine switch off. If the machine is equipped with bar-feeder, also the emergency push-button of it should be checked (insert the plug cap, if required).
+	+	+	+	+	+		+	+	**1008 BAR-FEEDER ALARM** Cause: Bar-feeder is faulty (ex.: insufficient oil pressure) or it is off. Effect: AUTOMATIC cycle stops. Remedy: Check if bar-feeder is connected, if it works, and if it is preset to work in automatic mode. Note: Since each type of bar-feeder has its own features, follow instructions given by the manufacturer.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
+	+	+	+	+	+	+	+	+	**1009 DEFECTIVE LUBRICATION** Cause: Lubrication cycle has not occurred for one of the following reasons: - in the tank of the lubrication unit oil level is too low, - there is an oil leakage in the lubrication system, - there is air in the lubrication system. Effect: AUTOMATIC cycle stops. Remedy: Check oil level and, if necessary, fill up with suitable oil. Find out and remove leakages; afterwards deaerate lubrication system operating the pump manually. If there is oil inside, check pump as well as pressure-operated cut-off switch and float gauge.
+	+	+	+	+	+	+	+	+	**1010 DOOR OPEN** Cause: Push-button CYCLE START has been pressed in AUTOMATIC mode while sliding doors were open (operator side) (lathes without motor-driven door). Effect: AUTOMATIC cycle stops. Remedy: Close the doors. Note: This alarm appears also when the door is not correctly locked by magnet when spindle rotates. Check that safety tab enters the limit switch correctly, without forcing.
+	+	+	+	+	+	+	+	+	**1011 HYDRAULIC UNIT THERMAL SWITCH** Cause: Thermal switch protecting oil pump motor has tripped. Effect: Machine EMERGENCY. Remedy: Reset thermal switch (QF3) in the electrical cabinet. Check if motor can rotate. Check motor temperature.
+	+	+	+	+	+	+	+	+	**1012 COOLANT PUMP THERMAL SWITCH** Cause: Thermal switch protecting coolant pump has tripped. Effect: AUTOMATIC cycle stops. Remedy: Reset thermal switch (QF4) in the electrical cabinet. Note: If the lathe is equipped with an additional pump, check thermal switch of this pump too (QF9).

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
+	+	+	+	+	+	+	+	+	**1013 SWARF CONVEYOR THERMAL SWITCH** Cause: **Thermal switch protecting swarf conveyor motor has tripped.** Effect: AUTOMATIC cycle stops. Remedy: Reset thermal switch (QF5 or QF10) in the electrical cabinet. Mechanically unlock conveyor (remove swarfs or mechanical parts).
+	+	+	+	+	+	+	+	+	**1014 COLLET OPEN** Cause: The operator has tried to make spindle rotate while collet or jaws were open. Effect: AUTOMATIC cycle stops. Remedy: Close the collet or the jaws. Note: It can sometimes be necessary to allow spindle rotation while workpiece is not clamped; this is possible entering the command M24 (collet opening) in MDI mode before starting spindle rotation.
+	+	+	+	+	+	+	+	+	**1015 SPINDLE DRIVE ALARM** Cause: Spindle drive does not work properly. Effect: AUTOMATIC cycle stops. Remedy: Without switching off the machine main breaker, open the electrical cabinet (while pressing push-button DOOR UNLOCKED) and read alarm code (i.e. AL12) on module display. For further information, check FANUC manual relevant to drives. To clear this alarm, switch off the machine by means of main circuit breaker wait about 15 seconds before switching on again. Note: If trouble occurs again, contact BIGLIA Service.
+	+	+	+	+	+		+	+	**1016 TAILSTOCK OVERTRAVEL** Cause: Tailstock has overcome its normal “forward” position and it has reached the limit-switch; this can depend on a wrong workpiece loading or on a too short component. Effect: AUTOMATIC cycle stops. Remedy: Check tailstock and workpiece length; if trouble occurs without reason, put overtravel limit-switch on a different position. Note: Only some types of tailstock are fitted with this additional safety device.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
+	+	+	+	+	+			+	**1017 FUNCTION -M- NOT ENDED** Cause: A function -M- is not ended within a stated period of time. Effect: AUTOMATIC cycle stops with alarm on. Remedy: Check if the commanded function is waiting for a response from a limit switch which is probably not operated. The commanded function is not carried out because the actuator dos not work.
						+	+		**1017 DEFECTIVE AIR PRESSURE** Cause: Air pressure is low with respect to the pressure-operated cut-off switch calibration value. Effect: Automatic cycle stops in HOLD. Remedy: Check pressure in the pneumatic installation and adjust pressure-operated cut-off switch, if required.
+	+	+	+	+	+	+	+	+	**1018 TOTAL MACHINED PARTS** Cause: The number of required parts has been achieved. Effect: Cycle stops on M90 block. Remedy: Reset and bring parts-counter to zero. Note: If this function is not required, enter 0 on parts required.
+	+	+	+	+	+	+	+	+	**1021 LUBRICATION PRESSURE OPERATED CUT-OFF SWITCH DEFECTIVE** Cause: Lubrication system is always under pressure, or pressure operated cut-off switch is faulty. Defective lubrication. Effect: Automatic cycle stops in HOLD. Remedy: Replace pressure operated cut-off switch . Check discharge valves fitted inside lubrication unit pump.
+	+	+	+	+			+	+	**1025 CYCLE TIME EXCEEDED** Cause: The pre-set cycle time was exceeded. Effect: Automatic cycle stops in HOLD. Remedy: Place selectors S and F to 100%. Increase pre-set time. Machine stopped waiting for a signal from an external actuator.
+	+	+	+	+	+	+	+	+	**1028 DRIVE THERMAL SWITCHES** Cause: One of the thermal switches protecting drive electronics or motor fans has tripped. Effect: Machine stops in HOLD mode. Remedy: Reset thermal switches (QF301-302-303-304).

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
+	+	+	+	+	+	+	+	+	**1030 HYDRAULIC PRESSURE LOW** Cause: Oil pressure is too low compared to pressure-operated switch adjustment. Effect: Machine stops in HOLD mode. Remedy: Check on the gauge the hydraulic system general pressure. Check there are not oil leakages. Check the correct operation of the pump intake filter. Check the calibration of pressure-operated switch SP14.
							+		**1031 Y-AXIS UNLOCKED** Cause: Anomaly during Y-axis locking (controlled by a pressure-operated switch). Effect: Machine stops with alarm on. Remedy: Check integrity of pipes, calibration of pressure-operated switch, correct operation of the locking gearcase.
+		+			+				**1038 TAILSTOCK UNLOCKED** Cause: The operator has tried to make spindle rotate even if workpiece is not clamped by tailstock. This alarm appears only when workpiece clamping by tailstock is preset - (third item of Operator's Panel on "AVIAM"=ON -pedal activated on tailstock). Effect: AUTOMATIC cycle stops. Remedy: Move tailstock forward and adjust limit-switch. Note: In the B1000 fitted with tailstock for traverse movement, this alarm appears while actuating tailstock forward movement with the support not locked on slides. Check clamping pressure in MDI mode, enter M50 and check the pressure-operated cut-off switch SP13.
+	+	+	+	+	+		+	+	**1040 COLLET QUILL OVERTRAVEL** Cause: Collet or chuck jaws have overcome the normal clamping position and hydraulic cylinder has reached overtravel limit switch: it can depend on a wrong loading or on a too small workpiece diameter. Effect: AUTOMATIC cycle stops. Remedy: Check workpiece diameter; if trouble occurs without reason, position quill limit switch on a different position. Note: Only some machine types are fitted with this additional safety device when the fourth item of Operator's Panel "COLLET LS" is on ON-AVIAM.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
	+		+	+	+	+	+	+	**1042 ALARM LIVE TOOLING** Cause: Motor drive does not work properly. Effect: AUTOMATIC cycle stops. Remedy: Without switching off the machine main breaker, open the electrical cabinet (while pressing push-button DOOR UNLOCKED) and read alarm code (i.e. AL12) on module display. For further information, check FANUC manual relevant to drives. To clear this alarm, switch off the machine by means of main circuit breaker wait about 15 seconds before switching on again. Note: If trouble occurs again, contact BIGLIA Service.
+	+	+	+	+	+			+	**1043 SPEED CHANGE NOT OCCURRED** Cause: Spindle speed change took more than 10 sec. (max. allowed time). Effect: AUTOMATIC cycle stops. Remedy: Repeat speed change in MDI mode. Note: If the fault occurs again, contact BIGLIA Service (a limit switch of gear-change may be faulty or gears motor may be defective).
	+		+	+	+			+	**1047 SUB-SPINDLE ALARM** Cause: Sub-spindle drive does not work properly. Effect: AUTOMATIC cycle stops. Remedy: Without switching off the machine main breaker, open the electrical cabinet (while pressing push-button DOOR UNLOCKED) and read alarm code (i.e. AL12) on module display. For further information, check FANUC manual relevant to drives. To clear this alarm, switch off the machine by means of main circuit breaker wait about 15 seconds before switching on again. Note: If trouble occurs again, contact BIGLIA Service.
							+		**1048 DOOR MICROSWITCH INTEGRITY VERIFICATION** Cause: After switching off the electric equipment, when switching on again the integrity of the "door closed" microswitch should be checked . Effect: Warning alarm. Remedy: Close and re-open door. Note: If the alarm persists, this means that the 'door closed' limit switch does not work properly. It does not close or is always closed.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
	+		+	+	+			+	**1049 TOOL BELT BROKEN** Cause: During driven tool rotation sensor has detected the transmission belt breakage. Effect: Machine stops with alarm on. Remedy: Check belt condition. Check sensor operation and adjust, if required. Note: Check that the pre-set rotation revolutions are not lower than 50.
							+		**1050 FUNCTION -M- NOT ENDED** Cause: A function -M- is not ended within a stated period of time. Effect: AUTOMATIC cycle stops with alarm on. Remedy: Check if the commanded function is waiting for a response from a limit switch which is probably not operated. The commanded function is not carried out because the actuator dos not work.
		+	+		+	+		+	**1051 TURRET STROBE SIGNAL DEFECTIVE** Cause: During turret rotation, the encoder signalling the positions failed. Effect: Machine stops with alarm on. Remedy: Try calling other positions and, if the alarm repeats, check and replace turret encoder. Note: Turret positions and strobe signal may be checked with the diagnostic analysis at the corresponding address as shown in the wiring diagram.
							+		**1052 TOOL BELT BROKEN** Cause: During driven tool rotation sensor has detected the transmission belt breakage. Effect: Machine stops with alarm on. Remedy: Check belt condition. Check sensor operation and adjust, if required. Note: Check that the pre-set rotation revolutions are not lower than 50.
		+	+		+	+		+	**1053 WANTED POSITION EXCEEDED** Cause: During turret positioning to a called station, the position was passed. This may be caused by excessive rotation speed or by encoder failure. Effect: Machine stops with alarm on. Remedy: Reduce rotation speed by reducing pressure. Replace the encoder. Note: Turret positions and strobe signal may be checked with the diagnostic analysis at the corresponding address as shown in the wiring diagram. If trouble occurs again, replace turret encoder.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
	+		+	+	+	+	+	+	**1056 LIVE TOOL NOT ORIENTED** Cause: Turret rotation has been commanded with driven tools not properly oriented. The oriented tool limit switch is not properly oriented or does not work. Effect: Machine stops in HOLD mode. Remedy: Select MDI, command M75 and try again. Check the oriented tool limit switch.
					+				**1057 TAILSTOCK CLAMP PRESSURE DEFECTIVE** Cause: Tailstock pressure is lower with respect to the value previously set on the pressure-operated cut-off switch. Effect: Machine stops with alarm on. Remedy: Check tailstock pressure adjust it, if required. Set the pressure-operated cut-off switch.
							+		**1057 PARTS-CATCHER LIMIT SWITCH DEFECTIVE** Cause: During command function of a parts-catcher move, both limit switches were simultaneously engaged, e.g.: forward/backward or up/down pressed together. Effect: Machine stops with alarm on. Remedy: Check limit switches.
							+		**1058 COLLET PRESSURE OUT-OF-RANGE** Cause: During programming the collet pressure has been set at a value out of the permissible range, specified by a parameter. Effect: Machine stops with alarm on. Remedy: Reset and set a value within the admissible range.
+	+	+	+	+				+	**1059 COOLANT DEFECTIVE** Cause: During coolant pump working, coolant feeding to tool stopped. Coolant lacking, filter clogged, pump does not work, a pipe broke or is clogged. Effect: Machine stops with alarm on. Remedy: Check coolant presence in the tank, coolant filter condition, integrity of pipes.
						+	+		**1059 COLLET PRESSURE DEFECTIVE** Cause: Pressure in the cylinder which commands collet closing is too low. Effect: Machine stops in HOLD mode. Remedy: Check collet pressure gauge and calibration of the pressure-operated cut-off switch fitted on the hydraulic installation.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
	+		+	+				+	**1060 ELECTRICAL SPINDLE COOLING THERMAL SWITCHES** Cause: Intervention of the thermal switch protecting the cooling unit of the electrical spindle. Effect: Machine stops with alarm on. Remedy: Check current absorption of the refrigerator and restore thermal switch.
						+		+	**1060 LEFT COOLANT DEFECTIVE (HEAD 1)** Cause: During coolant pump working, coolant feeding to tool stopped. Coolant lacking, filter clogged, pump does not work, a pipe broke or is clogged. Effect: Machine stops with alarm on. Remedy: Check coolant presence in the tank, coolant filter condition, integrity of pipes.
						+			**1061 UNCLAMPED WORKPIECE** Cause: Collet or chuck jaws have overcome the normal clamping position and hydraulic cylinder has reached overtravel limit switch: it can depend on a wrong loading or on a too small workpiece diameter. Effect: AUTOMATIC cycle stops. Remedy: Check workpiece diameter; if trouble occurs without reason, position quill limit witch on a different position. Note: Only some machine types are fitted with this additional safety device, when the fourth item of Operator's Panel "COLLET LS" is on ON-AVIAM.
	+		+	+				+	**1061 ELECTRICAL SPINDLE COOLING ANOMALY** Cause: Incorrect operation of the electrical spindle cooling unit. Cause: Check the coolant level in the tank and top up, if required. Check there is no clogging. Note: Consult the cooling unit manual given.
							+		**1062 B-AXIS NOT CORRECTLY POSITIONED** Cause: The operator tried to move sub-spindle forward (in-line) or backward (misaligned) or to lower the parts-catcher when B-axis is not in position (B0 / B-200). Effect: AUTOMATIC cycle stops - Sub-spindle does not move. Remedy: Position sub-spindle at a value between B0 and B-200.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
								+	**1063 PIECE NOT FOUND** Cause: During lifting a piece by B-axis with function M201 ON, the piece to be lifted was not in the foreseen position. Remedy: Check piece length or if it has moved away from its position.
								+	**1067 TURRET DRIVE ALARM** Cause: Alarm condition of the turret indexing drive, or a loss of parameters due to battery defective. Effect: Machine stopped with alarm on. Note: Check on the drive display the type of alarm and follow instructions of Annexe (1) based on the number displayed.
								+	**1068 AIR PRESSURE DEFECTIVE** Cause: Air pressure is low with respect to the pressure-operated cut-off switch calibration value. Effect: Automatic cycle stops in HOLD. Remedy: Check pressure in the pneumatic installation and adjust pressure-operated cut-off switch, if required.
							+		**1081 TURRET 2 DRIVE ALARM** Cause: Alarm condition of the turret (head 2) indexing drive, or a loss of parameters due to battery defective. Effect: Machine stopped with alarm on. Note: Check on the drive display the type of alarm and follow instructions of Annexe (1) based on the number displayed.
						+			**1081 TURRET 2 ENCODER PARITY ERROR** Cause: Signals transmitted by turret internal sensors are not correct. Effect: Cycle stops automatically in HOLD mode. Remedy: Turret has to be positioned again in MDI mode. Note: If trouble occurs again, contact BIGLIA Service (encoder may be faulty).
						+	+		**1082 TURRET 2 TOOL NOT FOUND** Cause: Tool change was not completed within 5 seconds (max. allowed time) Effect: Automatic cycle stops in HOLD mode. Remedy: Check if turret can rotate without crashing against machine components. Position turret again in MDI mode. Note: If trouble occurs again, contact BIGLIA Service (turret encoder and/or turret limit-switch or indexing solenoid may be faulty).

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
						+	+		**1083 TURRET 2 WRONG TOOL NUMBER** Cause: A wrong tool number has been entered (a T value higher than available positions on tool-holding plate has been programmed). Effect: AUTOMATIC cycle stops. Remedy: Check if Technological Program contains any mistake.
						+	+		**1085 TURRET 2 UNLOCKED** Cause: Turret is not locked properly. Limit switch may be faulty or mechanical locking may be defective. Effect: Automatic cycle stops in HOLD mode. Remedy: Position turret again in MDI mode (the first attempt is sometimes not successful; try again and call T values which are distant from the present position). Note: If trouble occurs again, contact BIGLIA Service. The alarm may appear together with "1002 tool not found".
						+			**1090 TURRET 2 DOOR OPEN** Cause: Push-button CYCLE START has been pressed in AUTOMATIC mode while sliding doors were open (operator side) (lathes without motor-driven door). Effect: AUTOMATIC cycle stops. Remedy: Close the doors. Note: This alarm appears also when the door is not correctly locked by magnet when spindle rotates. Check that safety tab enters the limit switch correctly, without forcing.
							+		**1094 SUB-SPINDLE COLLET OPEN** Causa: The operator has tried to make spindle rotate while collet or jaws were open. Effect: AUTOMATIC cycle stops. Remedy: Close the collet or the jaws. Note: It can sometimes be necessary to allow spindle rotation while workpiece is not clamped; this is possible entering the command M53 (collet opening) in MDI mode before starting spindle rotation.
						+			**1094 1094 HEAD 2 COLLET OPEN** Cause: The operator has tried to make spindle rotate while collet or jaws were open. Effect: AUTOMATIC cycle stops. Remedy: Close the collet or the jaws. Note: It can sometimes be necessary to allow spindle rotation while workpiece is not clamped; this is possible entering the command M24 (collet opening) in MDI mode before starting spindle rotation.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
							+		**1095 SUB-SPINDLE ALARM** Cause: Sub-spindle drive does not work properly. Effect: AUTOMATIC cycle stops. Remedy: Without switching off the machine main breaker, open the electrical cabinet (while pressing push- button DOOR UNLOCKED) and read alarm code (i.e. AL12) on module display. For further information, check FANUC manual relevant to drives.. To clear this alarm, switch off the machine by means of main circuit breaker; wait about 15 seconds before switching on again. Note: If trouble occurs again, contact BIGLIA Service.
						+			**1095 TURRET 2 SPINDLE ALARM** Cause: Spindle drive does not work properly. Effect: AUTOMATIC cycle stops. Remedy: Without switching off the machine main breaker, open the electrical cabinet (while pressing push- button DOOR UNLOCKED) and read alarm code (i.e. AL12) on module display. For further information, check FANUC manual relevant to drives. To clear this alarm, switch off the machine by means of main circuit breaker; wait about 15 seconds before switching on again. Note: If trouble occurs again, contact BIGLIA Service.
						+			**1098 HEAD 2 TOTAL MACHINED PARTS** Cause: The number of required parts has been achieved. Effect: Cycle stops on M90 block. Remedy: Reset and bring parts-counter to zero; if this function is not required, enter zero on parts required.
						+	+		**1122 HEAD 2 LIVE TOOLING ALARM** Cause: Motor drive does not work properly. Effect: AUTOMATIC cycle stops. Remedy: Without switching off the machine main breaker, open the electrical cabinet (while pressing push- button DOOR UNLOCKED) and read alarm code (i.e. AL12) on module display. For further information, check FANUC manual relevant to drives. To clear this alarm, switch off the machine by means of main circuit breaker; wait about 15 seconds before switching on again. Note: If trouble occurs again, contact BIGLIA Service.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
						+			**1131 TURRET 2 STROBE SIGNAL DEFECTIVE** Cause: During turret rotation, the encoder signalling the positions failed. Effect: Machine stops with alarm on. Remedy: Try calling other positions and, if the alarm repeats, check and replace turret encoder. Note: Turret positions and strobe signal may be checked with the diagnostic analysis at the corresponding address as shown in the wiring diagram.
							+		**1132 TOOL BELT BROKEN (HEAD 2)** Causa: During driven tool rotation (head 2) sensor has detected the transmission belt breakage. Effect: Machine stops with alarm on. Remedy: Check belt condition. Check sensor operation and adjust, if required. Note: Check that the pre-set rotation revolutions are not lower than 50.
						+			**1133 HEAD 2 WANTED POSITION EXCEEDED** Cause: During turret positioning to a called station, the position was passed. This may be caused by excessive rotation speed or by encoder failure. Effect: Machine stops with alarm on. Remedy: Reduce rotation speed by reducing pressure. Replace the encoder. Note: Turret positions and strobe signal may be checked with the diagnostic analysis at the corresponding address as shown in the wiring diagram. If trouble occurs again, replace turret encoder.
						+	+		**1136 TURRET 2 LIVE TOOL NOT ORIENTED** Cause: Turret rotation has been commanded with driven tools not properly oriented. The oriented tool limit switch is not properly oriented or does not work. Effect: Machine stops in HOLD mode. Remedy: Select MDI, command M75 and try again. Check the oriented tool limit switch.
						+			**1139 HEAD 2 COLLET PRESSURE DEFECTIVE** Cause: Pressure in the cylinder which commands collet closing is too low. Effect: Machine stops in HOLD mode. Remedy: Check the pressure-operated cut-off switch fitted on the hydraulic installation of the section related to Sub-spindle.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
							+		**1139 SUB-SPINDLE COLLET PRESSURE DEFECTIVE** Cause: Pressure in the cylinder which commands collet closing is too low. Effect: Machine stops in HOLD mode. Remedy: Check the pressure-operated cut-off switch fitted on the hydraulic installation of the section related to Sub-spindle.
						+	+		**1140 HEAD 2 COOLANT DEFECTIVE** Cause: During coolant pump working, coolant feeding to tool stopped. Coolant lacking, filter clogged, pump does not work, a pipe broke or is clogged. Effect: Machine stops with alarm on. Remedy: Check coolant presence in the tank, coolant filter condition, integrity of pipes.
						+			**1141 HEAD 2 UNCLAMPED WORKPIECE** Cause: Collet or chuck jaws have overcome the normal clamping position and hydraulic cylinder has reached overtravel limit switch: it can depend on a wrong loading or on a too small workpiece diameter. Effect: AUTOMATIC cycle stops. Remedy: Check workpiece diameter; if trouble occurs without reason, position quill limit witch on a different position. Note: Only some machine types are fitted with this additional safety device, when the fourth item of Operator's Panel "COLLET LS" is on ON-AVIAM.
							+		**1141 SUB-SPINDLE UNCLAMPED WORKPIECE** Cause: Collet or chuck jaws have overcome the normal clamping position and hydraulic cylinder has reached overtravel limit switch: it can depend on a wrong loading or on a too small workpiece diameter. Effect: AUTOMATIC cycle stops. Remedy: Check workpiece diameter; if trouble occurs without reason, position quill limit witch on a different position. Note: Only some machine types are fitted with this additional safety device, when the fourth item of Operator's Panel "COLLET LS" is on ON-AVIAM.

7. MESSAGE LIST

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650		
		+	+			+		+	2000	TURRET NOT POSITIONED
+	+			+			+		2000	TURRET 1 DRIVE BATTERY LOW
+	+	+	+	+	+	+	+	+	2006	TURRET UNLOCKED
+	+	+	+	+	+	+	+	+	2019	TOOL-SETTING ARM DOWN
+	+	+	+	+	+	+	+	+	2020	SPINDLE ROTATION
					+	+			2022	LIMIT. 1 AXIS ... TOOL N. ...
					+	+			2023	LIMIT. 2 AXIS ... TOOL N. ...
+	+	+	+	+	+	+	+	+	2024	TOOL LIFE END
					+	+			2025	CYCLE TIME EXCEEDED
+	+	+	+	+	+	+	+	+	2026	AUTOCUTOFF
	+		+	+			+	+	2027	B-AXIS TORQUE LIMIT EXCEEDED
					+				2027	Z-AXIS TORQUE LIMIT EXCEEDED
+	+	+	+	+	+	+	+	+	2029	END OF TOOL GROUPS
		+	+		+	+		+	2031	TURRET POSITION NUMBER NOT SET
+	+	+	+	+	+		+	+	2032	END OF BAR
+	+	+	+	+	+	+	+	+	2033	AXES RESET
+	+	+	+	+	+	+	+	+	2034	COLLET OPEN
+		+			+				2035	PEDAL ENABLE ON COLLET
+		+			+				2036	PEDAL ENABLE ON TAILSTOCK
+	+	+	+	+	+	+	+	+	2037	BATTERY LOW
+	+	+	+	+	+	+	+	+	2039	ZERO REFERENCE LIMIT SWITCH DEFECTIVE
+	+	+	+	+	+	+	+	+	2041	SPINDLE LOCKED
+	+	+	+	+	+	+	+	+	2044	DRY RUN
+	+	+	+	+	+	+	+	+	2045	SWARF CONVEYOR BLOCKED
+	+	+	+	+	+	+	+	+	2046	PARTS-CATCHER ALARM
				+					2048	AXES X+ / Y OVERTRAVEL
				+					2050	AXES X– / Y OVERTRAVEL
		+	+		+	+		+	2052	TURRET STROBE SIGNAL =0
+	+	+	+	+	+	+	+	+	2054	PRESS RESET PUSH-BUTTON
+	+	+	+	+	+	+	+	+	2055	LUBRICATING OIL LEVEL LOW

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650		
+	+	+	+	+				+	2057	X-AXIS STRESS LIMIT EXCEEDED
+	+	+	+	+				+	2058	Z-AXIS STRESS LIMIT EXCEEDED
							+		2058	AXES -B- / -Z2- OVERTRAVEL
								+	2062	OIL FILTER CLOGGED
							+		2063	X1-AXIS STRESS LIMIT EXCEEDED
				+					2064	Y-AXIS NOT POSITIONED AT ZERO
							+		2064	Z1-AXIS STRESS LIMIT EXCEEDED
	+		+	+			+	+	2065	BAR-FEEDER STOP
								+	2066	TURRET DRIVE BATTERY LOW
							+		2070	PARTS-CATCHER DRIVE BATTERY LOW
						+			2080	HEAD 2 - TURRET NOT POSITIONED
							+		2080	TURRET 2 DRIVE BATTERY LOW
						+	+		2086	HEAD 2 - TURRET UNLOCKED
						+			2099	HEAD 2 - TOOL-SETTING ARM DOWN
						+			2100	HEAD 2 - SPINDLE ROTATION
						+			2102	HEAD 2 - LIMIT 1 AXIS …. TOOL No. … EXCEEDED
						+			2103	HEAD 2 - LIMIT 2 AXIS …. TOOL No. … EXCEEDED
						+	+		2104	HEAD 2 - TOOL LIFE END
						+	+		2109	HEAD 2 - END OF TOOL GROUPS
						+			2111	TURRET 2 POSITION NUMBER NOT SET
						+			2113	HEAD 2 - AXES RESET
							+		2114	SUB-SPINDLE COLLET OPEN
						+			2114	HEAD 2 - COLLET OPEN
						+			2119	RIGHT AXIS ZERO LIMIT SWITCH DEFECTIVE
						+			2126	RIGHT PARTS-CATCHER ALARM
						+			2132	TURRET 2 STROBE SIGNAL =0
							+		2143	X2-AXIS STRESS LIMIT EXCEEDED
							+		2144	Z2-AXIS STRESS LIMIT EXCEEDED

7.1 Detailed description of messages series "2000"

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
		+	+			+		+	**2000 TURRET NOT POSITIONED** Cause: Turret position does not coincide with the last T value programmed on CNC unit. Remedy: Position turret again under MDI mode. Note: If trouble occurs again, contact BIGLIA Service (turret encoder and/or turret limit-switch may be faulty).
+	+			+			+		**2000 TURRET 1 DRIVE BATTERY LOW** Cause: Battery supplying the encoder of turret indexing motor is to be replaced since its voltage is too low. The encoder cable, motor side or drive side, is disconnected. Effect: Machine stopped with message on. Note: Check on the drive display the type of alarm and follow instructions of Annexe (1) based on the number displayed.
+	+	+	+	+	+	+	+	+	**2006 TURRET UNLOCKED** Cause: Turret is not locked properly. Remedy: Position turret again under MDI mode (the first attempt is sometimes not successful; try again and call T values which are distant from the present position). Note: If trouble occurs again, contact BIGLIA Service (limit-switch controlling turret lock may be faulty).
+	+	+	+	+	+	+	+	+	**2019 TOOL-SETTING ARM DOWN** Cause: The operator tried to rotate spindle with tool-setter in forward position. Effect: Spindle cannot rotate. Remedy: Actuate tool-setter backward movement. Note: Check that limit switch is properly working and positioned.
+	+	+	+	+	+	+	+	+	**2020 SPINDLE ROTATION** Cause: The operator tried to let tool-setting arm down while spindle is rotating. Effect: Tool-setter does not move. Remedy: Stop spindle.
					+	+			**2022 LIMIT 1 AXIS ... TOOL No. ...** Cause: The 1st limit was exceeded by tool No. ... (1 to 12). Effect: Machine stops at cycle end. Remedy: Reset alarm. Move barrier position if tool is still in good cutting condition. Replace insert if worn out. Cutting parameters were changed after the self-learning. Machining allowance or type of material different from the one used for self-learning.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
					+	+			**2023 LIMIT 2 AXIS ... TOOL No. ...** Cause: The 2nd limit was exceeded by tool No. ... (1 to 12). Effect: Machine stops at cycle end. Remedy: Reset alarm. Move barrier position if tool is still in good cutting condition. Replace insert if worn out. Cutting parameters were changed after the self-learning. Machining allowance or type of material different from the one used for self-learning.
+	+	+	+	+	+	+	+	+	**2024 TOOL LIFE END** Cause: The last available tool was used. Remedy: Replace inserts. Reset tool table. If variable #1005 is used, it is possible to stop cycle.
					+	+			**2025 CYCLE TIME EXCEEDED** Cause: The cycle time set value was exceeded. Effect: Automatic cycle stops in HOLD mode. Rimedio: Replace the two selectors S and F to 100%. Increase the time set value. Machine stops waiting a signal from an external actuator.
+	+	+	+	+	+	+	+	+	**2026 AUTOCUTOFF** Cause: If the machine remains stopped for a long time with an alarm on, or with messages 2022 and 2023, it is possible to select to switch off the hydraulic unit and all power after a set time has been elapsed. This function is called from the operator's panel.
	+		+	+			+	+	**2027 B-AXIS TORQUE LIMIT EXCEEDED** Cause: While M78 function was activated, the absorbed torque in G1 (working) from B-axis has exceeded the value set. Remedy: Remove the cause of excessive torque. Increase the value set. Note: M79 function remove the M78 control.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
					+				**2027 Z-AXIS TORQUE LIMIT EXCEEDED** Cause: While M78 function was activated, the absorbed torque in G1 (working) from Z-axis has exceeded the value set. Remedy: Remove the cause of excessive torque. Increase the value set. Note: M79 function remove the M78 control.
+	+	+	+	+	+	+	+	+	**2029 END OF TOOL GROUPS** Cause: This message appears when first workpiece, carried out with the new tool of the new group, is finished. Remedy: It is possible to stop cycle if the variable # 1006 is used in the program.
		+	+		+	+		+	**2031 TURRET POSITION NUMBER NOT SET** Cause: Turret position number was not set in the diagnostic machine data. Remedy: Set relevant value.
+	+	+	+	+	+		+	+	**2032 END OF BAR** ause: In bar-feeders without magazine (e.g.: Idrobar) it signals that bar is finished (N.B. - when M52 is entered with collet open, only). Effect: AUTOMATIC Cycle stops (with collet open, only). Remedy: Manually load a new bar.
+	+	+	+	+	+	+	+	+	**2033 AXES RESET** Cause: Cycle has been started by CYCLE START push-button without resetting axes. The operator has begun tool-setting with probe without having reset axes. (N.B. - This message appears also after a graphic simulation with axes off). Remedy: Set all axes to zero.
+	+	+	+	+	+	+	+	+	**2034 COLLET OPEN** Cause: The operator has tried to make spindle rotate while collet or jaws were open. Effect: Spindle cannot rotate. Remedy: Stop spindle, close collet or jaws and then start spindle again manually.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
+		+			+				**2035 PEDAL ENABLE ON COLLET** Cause: This message appears when switching on the machine, to remind which workpiece clamping device the machine has been preset for. Note: This selection is carried out from the Operator's panel, 2nd item "PZ/CT".
+		+			+				**2036 PEDAL ENABLE ON TAILSTOCK** Cause: This message appears when switching on the machine, to remind which workpiece clamping device the machine has been preset for. This system is fit for machining shafts clamped between face-driver and tailstock. Note: This selection is carried out from the Operator's panel, 2nd item "PZ/CT".
+	+	+	+	+	+	+	+	+	**2037 BATTERY LOW** Cause: The battery of CNC unit is low and it has to be replaced. Remedy: Replace battery. Note: When replacing battery, CNC unit must be on; otherwise, machine parameters as well as all part programs will be cleared.
+	+	+	+	+	+	+	+	+	**2039 ZERO REFERENCE LIMIT SWITCH DEFECTIVE** Cause: When searching machine zero point, at zero limit switch release, the contact does not work or limit switch is mechanically blocked. Remedy: Check the limit switch.
+	+	+	+	+	+	+	+	+	**2041 SPINDLE LOCKED** Cause: The operator tried to rotate spindle with manual pushbuttons while it was locked by the disc brake. Effect: Spindle cannot rotate. Remedy: Unlock spindle in MDI mode before rotating it by means of manual pushbuttons.
+	+	+	+	+	+	+	+	+	**2044 DRY RUN** Cause: This message appears when "DRY-RUN" is effected in rapid traverse under AUTO mode.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
+	+	+	+	+	+	+	+	+	**2045 SWARF CONVEYOR BLOCKED** Cause: Swarf conveyor is blocked (usually owing to swarfs) Remedy: Select JOG mode, switch selector for changing conveyor direction and start swarf conveyor again by means of push-button. Remove the cause of jam (e.g. too many swarfs, parts or service spanners), and switch selector on previous position.
+	+	+	+	+	+	+	+	+	**2046 PARTS-CATCHER ALARM** Cause: External parts-catcher does not work properly. Remedy: Check the parts-catcher failure cause.
				+					**2048 AXES X+ / Y OVERTRAVEL** Cause: X+ movement is prevented towards positive direction by Y axis position. Y axis movement causes a movement of X+ axis more than the allowed limit. Remedy: Move to opposite direction.
				+					**2050 AXES X- / Y OVERTRAVEL** Cause: X- movement is prevented towards positive direction by Y axis position. Y axis movement causes a movement of X- axis more than the allowed limit. Remedy: Move to opposite direction.
		+	+		+	+		+	**2052 TURRET STROBE SIGNAL =0** Cause: During turret rotation a failure occurred to the encoder controlling positions. Remedy: Try calling other positions and, if alarm repeats, check and replace the turret encoder. Note: Turret positions and strobe signal may be checked with the diagnostic analysis at the relevant address as shown in the wiring diagram.
+	+	+	+	+	+	+	+	+	**2054 PRESS RESET PUSH-BUTTON** Cause: It signals that reset push-button has to be operated. Remedy: Press the reset push-button.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
+	+	+	+	+	+	+	+	+	**2055 LUBRICATING OIL LEVEL LOW** Cause: Oil level in the lubricating unit is below the minimum limit. Remedy: Add oil in the lubrication tank.
+	+	+	+	+				+	**2057 X-AXIS STRESS LIMIT EXCEEDED** Cause: With M78 function enabled, the stress absorbed by X-axis in G (working) has exceeded set value. Remedy: Remove the cause of excessive stress. Set a higher value. Note: Function M79 eliminates the M78 control.
+	+	+	+	+				+	**2058 Z-AXIS STRESS LIMIT EXCEEDED** Cause: With M78 function enabled, the stress absorbed by Z-axis in G (working) has exceeded set value. Remedy: Remove the cause of excessive stress. Set a higher value. Note: Function M79 eliminates the M78 control.
							+		**2058 AXIS -B- / -Z2- OVERTRAVEL** Cause: Axis -B- / -Z2- moved out of the permissible limits. Rimedy: Move the axis in the opposite direction by JOG.
								+	**2062 OIL FILTER CLOGGED** Cause: ntervention of the sensor on the oil filter. Rimedy: Replace the filter or clean the filter cartridge.
							+		**2063 X1-AXIS STRESS LIMIT EXCEEDED** Cause: With M78 function enabled, the stress absorbed by X1-axis in G (working) has exceeded set value. Remedy: Remove the cause of excessive stress. Set a higher value. Note: Function M79 eliminates the M78 control.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
				+					**2064 Y-AXIS NOT POSITIONED AT ZERO** Cause: The Y-axis is not at zero point during Werkzeugsetzer operation in manual mode. Rimedy: Conduct Y-axis at zero point.
							+		**2064 Z1-AXIS STRESS LIMIT EXCEEDED** Cause: With M78 function enabled, the stress absorbed by Z1-axis in G (working) has exceeded set value. Remedy: Remove the cause of excessive stress. Set a higher value. Note: Function M79 eliminates the M78 control.
	+		+	+			+	+	**2065 BAR-FEEDER STOP** Cause: The operator has tried to rotate the spindle without the bar-feeder consent. Effect: Spindle rotation locked. Rimedy: Check the correct operation of the bar-feeder.
								+	**2066 TURRET DRIVE BATTERY LOW** Cause: Battery supplying the encoder of turret indexing motor is to be replaced since its voltage is too low. The encoder cable, motor side or drive side, is disconnected. Effect: Machine stopped with message on. Note: Check on the drive display the type of alarm and follow instructions of Annexe (1) based on the number displayed.
							+		**2070 PARTS-CATCHER DRIVE BATTERY LOW** Cause: Battery supplying the encoder of parts-catcher motor is to be replaced since its voltage is too low. The encoder cable, motor side or drive side, is disconnected. Effect: Machine stopped with message on. Note: Check on the drive display the type of alarm and follow instructions of Annexe (1) based on the number displayed.
						+			**2080 HEAD 2 - TURRET NOT POSITIONED** Cause: Turret position does not coincide with the last T value programmed on CNC unit. Remedy: Position turret again under MDI mode. Note: If trouble occurs again, contact BIGLIA Service (turret encoder and/or turret limit-switch may be faulty).

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
							+		**2080 TURRET 2 DRIVE BATTERY LOW** Cause: Battery supplying the encoder of turret indexing motor is to be replaced since its voltage is too low. The encoder cable, motor side or drive side, is disconnected. Effect: Machine stopped with message on. Note: Check on the drive display the type of alarm and follow instructions of Annexe (1) based on the number displayed.
						+	+		**2086 HEAD 2 - TURRET UNLOCKED** Cause: Turret is not locked properly. Remedy: Position turret again under MDI mode (the first attempt is sometimes not successful; try again and call T values which are distant from the present position). Note: If trouble occurs again, contact BIGLIA Service (limit-switch controlling turret lock may be faulty).
						+			**2099 HEAD 2 - TOOL-SETTING ARM DOWN** Cause: The operator tried to rotate spindle with tool-setter in forward position. Effect: Spindle cannot rotate. Remedy: Actuate tool-setter backward movement. Note: Check that limit switch is properly working and positioned.
						+			**2100 HEAD 2 - SPINDLE ROTATION** Cause: The operator tried to let tool-setting arm down while spindle is rotating. Effect: Tool-setter does not move. Remedy: Stop spindle.
						+			**2102 HEAD 2 - LIMIT 1 AXIS …. TOOL No. … EXCEEDED** Cause: The 1st limit was exceeded by tool No. ... (1 to 12). Effect: Machine stops at cycle end. Remedy: Reset alarm. Move barrier position if tool is still in good cutting condition. Replace insert if worn out. Cutting parameters were changed after the self-learning. Machining allowance or type of material different from the one used for self-learning.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
						+			**2103 HEAD 2 - LIMIT 2 AXIS …. TOOL No. … EXCEEDED** Cause: The 2nd limit was exceeded by tool No. ... (1 to 12). Effect: Machine stops at cycle end. Remedy: Reset alarm. Move barrier position if tool is still in good cutting condition. Replace insert if worn out. Cutting parameters were changed after the self-learning. Machining allowance or type of material different from the one used for self-learning.
						+	+		**2104 HEAD 2 - TOOL LIFE END** Cause: The last available tool was used. Remedy: Replace inserts. Reset tool table. If variable #1005 is used, it is possible to stop cycle.
						+	+		**2109 HEAD 2 - END OF TOOL GROUPS** Cause: This message appears when first workpiece, carried out with the new tool of the new group, is finished. Remedy: It is possible to stop cycle if the variable # 1006 is used in the program.
						+			**2111 TURRET 2 POSITION NUMBER NOT SET** Cause: Turret position number was not set in the diagnostic machine data. Remedy: Set relevant value.
						+			**2113 HEAD 2 - AXES RESET** Cause: Cycle has been started by CYCLE START push-button without resetting axes. The operator has begun tool-setting with probe without having reset axes. (N.B. - This message appears also after a graphic simulation with axes off). Remedy: Set all axes to zero.
							+		**2114 SUB-SPINDLE COLLET OPEN** Cause: The operator has tried to make spindle rotate while collet or jaws were open. Effect: Spindle cannot rotate. Remedy: Stop spindle, close collet or jaws and then start spindle again manually.

B301 21i	B301	B501 21i	B501	B501Y	B1000	B200	B445-B470	B650	
						+			**2114 HEAD 2 - COLLET OPEN** Cause: The operator has tried to make spindle rotate while collet or jaws were open. Effect: Spindle cannot rotate. Remedy: Stop spindle, close collet or jaws and then start spindle again manually.
						+			**2119 RIGHT AXIS ZERO LIMIT SWITCH DEFECTIVE** Cause: When searching machine zero point, at zero limit switch release, the contact does not work or limit switch is mechanically blocked. Remedy: Check the limit switch.
						+			**2126 RIGHT PARTS-CATCHER ALARM** Cause: The machine external parts-catcher is in alarm condition. Remedy: Find the cause which have generated the parts-catcher failure.
						+			**2132 TURRET 2 STROBE SIGNAL =0** Cause: During turret rotation, the encoder signalling the positions failed. Remedy: Try calling other positions and, if the alarm repeats, check and replace turret encoder. Note: Turret positions and strobe signal may be checked with the diagnostic analysis at the corresponding address as shown in the wiring diagram.
							+		**2143 X2-AXIS STRESS LIMIT EXCEEDED** Cause: With M78 function enabled, the stress absorbed by X2-axis in G (working) has exceeded set value. Remedy: Remove the cause of excessive stress. Set a higher value. Note: Function M79 eliminates the M78 control.
							+		**2144 Z2-AXIS STRESS LIMIT EXCEEDED** Cause: With M78 function enabled, the stress absorbed by Z2-axis in G (working) has exceeded set value. Remedy: Remove the cause of excessive stress. Set a higher value. Note: Function M79 eliminates the M78 control.

8. BIGLIA MACRO ALARMS

8.1 From G131 (piece lifting with tailstock)

Alarm on display	Cause and remedy
3004 LIMIT D HIGHER THAN A-2	Modify either D value or parameter 1826/B.
3001 B -AXIS MIS POSITIONING	B-axis has gone over the limit D: workpieces moved during machining.

8.2 From G183 (peck drilling)

Alarm on display	Cause and remedy
3005 EXCESSIVE REPETITION	Cycle has foreseen more than 18 times chip discharging: modify value D (1° cut) or A (min. cut) or both.
3006 B VALUE IS HIGHER THAN -C-	Modify programme.
3007 C VALUE IS HIGHER THAN -I-	Modify programme.
3008 A VALUE IS HIGHER THAN -D-	Modify programme.
3009 K VALUE IS HIGHER THAN -0-	Modify programme.

8.3 From B- axis monitoring to drill

Alarm on display	Cause and remedy
3041 LIMIT 1 B-AXIS LOAD	Bit / inserts worn or limit 1 too near A.SET value. Change bit / inserts if worn or increase limit 1.
3042 LIMIT 2 B-AXIS LOAD	Bit / inserts broken or limit 2 too near A.SET value. Change bit / inserts if broken or increase limit 2.

8.4 From tool load monitoring (SBS)

Alarm on display	Cause and remedy
3001 LIMIT 1 AXIS LOAD	Inserts worn or limit 1 too near A.SET value. Change inserts if worn or increase limit 1. (See note)
3002 LIMIT 2 AXIS LOAD	Bit / inserts broken or limit 2 too near A.SET value. Change bit / inserts if broken or increase limit 2. (See note)

NOTE Check also the four **Timer 8, 9, 10, 11**.

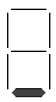
9. TURRETS AND PARTS-CATCHER WITH ELECTRONIC MOTOR UNIT ALLARMS

This part describes troubleshooting procedures to be applied in the event of a failure.
If a failure occurs, determine the cause and apply an appropriate countermeasure while referring to the corresponding description in the manual. Firstly, check the LED display on the driving unit in the electric box and the alarm number on the numeric control (PMM), see paragraph 11 [MSG].
Determine the cause and apply an appropriate countermeasure.

Number	Alarm type
from **000** to **299**	**Program or setting alarm**
from **300** to **399**	**Pulse coder alarm**
from **400** to **499**	**Servo alarm**
from **500** to **599**	**Overtravel alarm**
– –	**System alarm or I/O link alarm**

9.1 Program or setting alarms (PS alarms)

Alarmes No. CNC	LED display	Description
000		Cause: A parameter that requires power-down has been specified. Remedy: Turn the power off, back on.
011		Cause: The specified feedrate is zero. Remedy: Check the feed rate parameter specified with a function code.
013		Cause: The specified feedrate (maximum feedrate) is zero. Remedy: Check the value of parameter No.043, which indicates the maximum feed-rate that can be specified.
070		Cause: More than 32 blocks have been registered for a buffering operation. Remedy: Reduce the number of registered blocks to 32.
085		Cause: Input the reader/punch interface or the like caused an overrunm parity or framing error. Remedy: Correct the baud rate of the input/output unit (always 4800) or other settings.
086		Cause: Input from the reader/punch interface or the like included an input/ output unit operation ready signal (DR) that is set to off. Remedy: Turn the reader / punch on. Check the cable connection.
087		Cause: After input from the reader/punch interface or the like stops, character input does not stop even though ten characters have been input. Remedy: Check the cable connection.

Alarmes No. CNC	LED display	Description
090		Cause: Reference position setting cannot be executed normally. Remedy: Move the tool in the direction of reference position return in jog mode at a speed that causes the servo position error to exceed 128. Then, specify another reference position setting.
093		Cause: A first to third reference position return cannot be executed because the reference position has not yet been established. Remedy: Set the reference position.
224		Cause: The reference position has not yet been established. This occurs only when the ZRTN bit of parameter No. 001 is set to 0. Remedy: Set the reference position.
250		Cause: Input data 1 is invalid. Remedy: Check input data 1, specified with a function code.
251		Cause: Input data 2 is invalid. Remedy: Check input data 2, specified with a function code.
254		Cause: A function code or mode is invalid. Remedy: Check the command code, specified with a function code. Check the mode.
255		Cause: Operation cannot be activated because an invalid mode is specified or because block execution is in progress. Remedy: Check the mode. Check whether a block is being executed.
290		Cause: The interface switch signal (DRC) was switched during block execution. Remedy: Switch the signal after block execution stops.
291		Cause: The speed of an axial movement specified by an external pulse has exceeded the upper limit. This occurs only when the EPEXA bit of parameter No.001 is set to 1. Remedy: Check the speed specified by the external pulse. Check the magnification of the external pulse (parameters No.062 and 063).
292		Cause: A checksum error for the battery-powered memory was detected. Remedy: Parameters are cleared. Set the parameters again. If this alarm subsequently recurs, replace the unit.

9.2 Pulse coder alarms

Alarmes No. CNC	LED display	Description
300		Cause: A communication error (DTER) for the serial pulse coder was detected. Remedy: Check the continuity of the signal cable. If the cable is normal, the pulse coder may be defective. Turn the power off. If the alarm recurs when the power is reapplied, replace the serial pulse coder, together with the motor.
301		Cause: A communication error (CRCER) for the serial pulse coder was detected. Remedy: Check the continuity of the signal cable. If the cable is normal, the pulse coder or servo unit may be defective. This error may also be caused by external noise. See the chapter on noise reduction in “Connection”.
302		Cause: A communication error (STBER) for the serial pulse coder was detected. Remedy: Check the continuity of the signal cable. If the cable is normal, the pulse coder or servo unit may be defective. This error may also be caused by external noise. See the chapter on noise reduction in “Connection”.
303		Cause: An LED disconnection (LDAL) was detected in the serial pulse coder. Remedy: Turn the power off. If this alarm recurs when the power is reapplied, replace the motor.
304		Cause: A mispulse alarm (PMAL) for the serial pulse coder was detected. Remedy: Turn the power off. If this alarm recurs when the power is reapplied, replace the motor.
305		Cause: A miscount alarm (CMAL) for the serial pulse coder was detected. Remedy: Turn the power off. If this alarm recurs when the power is reapplied, replace the motor. If the alarm does not recur, restart the operation from reference position return.
306		Cause: The motor has overheated (CHAL). Remedy: This alarm is issued when the amplified has overheated, causing the thermostat to trip. Possible causes include an excessively high ambient temperature and excessively strict operating conditions. Check the actual cause. Disconnect the power for about ten minutes, then release the emergency stop state . If the alarm recurs, replace the amplifier.

Alarmes No. CNC	LED display	Description
308		Cause: A soft phase alarm (SPHAL) was detected. Remedy: Turn the power off. The alarm may be caused by noise.
319		Cause: When the absolute pulse coder is used, the motor has not yet rotated through more than one turn after the first power- up. Remedy: Cause the motor to rotate through more than one turn in JOG feed mode, then turn the power off then back on.
350		Cause: The battery voltage of the absolute pulse coder is low. Remedy: Replace the battery. Restart the operation from reference position return.
351		Cause: The battery voltage of the absolute pulse coder is low (warning). Remedy: Replace the battery.

9.3 Servo alarms

Alarmes No. CNC	LED display	Description
400		Cause: The servo motor has overheated (estimated value). Remedy: Turn the power off. After a while, turn the power back on. Possible causes include an excessively high acceleration / deceleration frequency.
401		Cause: Servo amplifier "ready" signal (DRDY) went off. Remedy:
403		Cause: The cooling fins have overheated (hardware detection). Remedy: The load on the motor may be too high. Re-examine the load conditions.
404		Cause: The regenerative discharge unit has overheated. Remedy: This alarm is issued when the average regenerative discharge energy is too high (when the acceleration/deceleration frequency is too high, for example). When the regenerative discharge resistor is not being used, check whether a dummy connector is fitted to the CX11-6 connector. When the regenerative discharge resistor is being used: (1) The average regenerative discharge energy may be too high. Decrease the acceleration / deceleration frequency. (2) The thermostat line of the separate regenerative discharge unit may not be connected properly. Check the connection. (3) The thermostat of the separate regenerative discharge unit may be defective. Disconnect the separate regenerative discharge unit, then check the thermostat. If the thermostat is open even though the separate regenerative discharge unit is cool, replace the separate regenerative discharge unit. If (1) to (3) are not the cause of the alarm, replace the servo amplifier.
405		Cause: Reference position return could not be executed correctly. Remedy: Re-execute reference position return.
410		Cause: The servo position error in the stop state is larger than the value specified in parameter No.110. Remedy: Determine the mechanical cause of the large position error. If no mechanical cause is found, specify a large value for the parameter.

Alarmes No. CNC	LED display	Description
411		Cause: The servo position error during movement is larger than the value specified in parameter No.182. Remedy: Determine the mechanical cause of the large position error. If no mechanical cause is found, apply any of the following counter-measure: -- Specify a larger value for the parameter. -- Specify a lower feedrate. -- Increase the time constants.
412		Cause: An overcurrent alarm is issued. Remedy: This alarm is issued when an excessively large current flows in the main circuit. (1) Check whether a valid motor number is specified in parameter No.30. If yes, go to (2). (2) Check whether the standard values are specified in the current control parameters to servo control. Correct current control is possible only when the standard values are specified for the following parameters: No.70, 71, 72, 78, 79, 84, 85, 86, 87, 88, 89, 90. (3) Disconnect the power line from the amplifier connector. Then, release the emergency stop state. -- If the overcurrent alarm continues to be issued, replace the ampli- fier. -- If no overcurrent alarm is issued, go to (4). (4) Disconnect the power line from the amplifier connector. Check the insulation between the ground and each of U, V and W . If the insulation is satisfactory, go to (5). If a short-circuit is detected, disconnect the power line from the motor connector. Then, check the insulation between the ground and each of U, V and W of the motor. If a short-circuit is found between the ground and U, V or W of the motor, replace the motor. If the insulation is satisfactory, replace the power line. (5) Connect the power line. Observe the waveform of the motor current (IR, IS) while the motor is accelerating or decelerating. See the description of the checking of the motor current in Appendix E “Servo Check Board”. If the motor current (IR, IS) does not exhibit a normal sine wave, replace the amplifier. (6) If (1) to (4) above are not the cause of the alarm, the pulse coder, command cable, or internal hardware of the CNC may be defective.

Alarmes No. CNC	LED display	Description
413		Cause: A DC link overvoltage alarm is issued. Remedy: This alarm is issued when the DC voltage of the main circuit power is too high. (1) The supply voltage for dynamic power may exceed the rated value. Check the voltage. If the voltage is too high, reduce the voltage to an appropriate level. (2) The regenerative discharge unit may not be properly connected . Check the connection. (3) The resistance of the separate regenerative discharge unit may be abnormal. Disconnect the separate regenerative discharge unit, then check the resistance. If the resistance is not within +20% of the predetermined resistance, replace the separate regenerative discharge unit . If (1) to (3) are not the cause of the alarm, replace the servo amplifier.
414		Cause: A DC link low voltage alarm is issued. Remedy: This alarm is issued when the DC voltage of the main circuit power is too low. (1) The external circuit breaker may be turned off. Check the circuit breaker. (2) The supply voltage for dynamic power is lower than the rated value. Check the voltage. If the voltage is too low, increase it to an appropriate level. (3) The external magnetic contactor may not be connected properly. Check the connection. If (1) to (3) are not the cause of the alarm, replace the servo amplifier.
417		Cause: A parameter has been specified incorrectly Remedy: Check the following parameters: No.30: Is the specified motor type correct? No.31: Is the specified direction of rotation of the motor correct? No.106: Is the denominator of the number of pulses per single revolution of the motor 0? No.180: Is the specified reference counter capacity 0 or a negative value?
418		Cause: A DO alarm is issued. Remedy: Replace the servo unit.
423		Cause: The specified speed exceeds 32767000 detection units per second. Remedy: Re-examine the CMR and speed settings.

Alarmes No. CNC	LED display	Description
425		Cause: The cooling fan has stopped. Remedy: This alarm is issued when the fan motor built into the servo amplifier has failed. (1) Check that the fan is not clogged with foreign matter. (2) Check that the power connector of the fan is connected properly. (3) Replace the fan or servo unit.

9.4 Overtravel alarms

Alarmes No. CNC	LED display	Description
500		Cause: The positive stroke limit has been exceeded. Remedy: Check whether *+OT and * -OT are connected correctly. Check whether a correct move command is specified. Move the tool in the opposite direction in JOG mode, then perform a reset.
501		Cause: The negative stroke limit has been exceeded. Remedy: Check whether *+OT and * -OT are connected correctly. Check whether a correct move command is specified. Move the tool in the opposite direction in JOG mode, then perform a reset.
510		Cause: The positive soft stroke limit has been exceeded. Remedy: Check whether appropriate values have been specified for parameters No.142 and 143. Check whether a valid move command is specified. Move the tool in the opposite direction in JOG mode, then perform a reset.
511		Cause: The negative soft stroke limit has been exceeded. Remedy: Check whether appropriate values have been specified for parameters No.142 and 143. Check whether a valid move command is specified. Move the tool in the opposite direction in JOG mode, then perform a reset.

9.5 System alarms

Alarmes No. CNC	LED display	Description
- -		Cause: An error was detected in theRAM write / read test at power-up. Remedy: Replace the unit.
- -		Cause: An error was detected in the data collation check for the battery-powered memory. Remedy: Turn the power off then back on. Then, re-enter the parameters. If thisalarm recurs, replace the unit.
- -		Cause: A data transfer alarm for the battery-powered memory has been issued. Remedy: Replace the unit.
- -		Cause: A watchdog alarm was issued. Remedy: Turn the power off then back on. If thisalarm recurs, replace the unit.
- -		Cause: A checksum alarm for the control software ROM is issued. Remedy: Replace the unit.
- -		Cause: A checksum alarm for the ROM that is built into the CPU is issued. Remedy: Replace the unit.
- -		Cause: An error was detected in the control circuit. Remedy: Replace the unit.

9.6 I/O link alarms

Alarmes No. CNC	LED display	Description
- -		Cause: A FANUC I/O link error occurred. A unit connected to the line was turned off. Remedy: Turn off the power to all units connected to the line. Then, turn on the "slave" devoces, followed by the "master" device.

9.7 No LED display

Alarmes No. CNC	LED display	Description
- -		Cause: The control circuit is not operating normally. Remedy: (1) Check the 24-VDC control supply voltage. If the voltage is low, increase the voltage to an appropriate level. (2) Check whether a fuse in the servo unit has blown. If a blown fuse is found, replace it, following the procedure described in Section 3 “Replacing Fuse”. If (1) and (2) are not the cause, replace the servo amplifier.

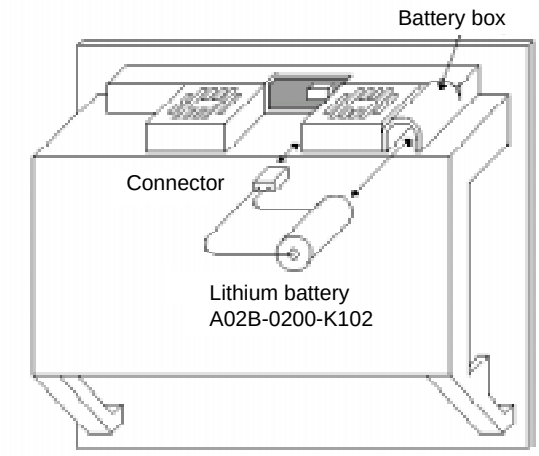
10. BATTERIES REPLACEMENT

10.1 Procedure for CNC series "i"

Provide a new battery [code for reordering: A02B-0200-K102 (GE FANUC specification: A98L-0031-0012)].

PROCEDURE

1. Open the numeric control compartment for access to rear part.
   (Batteries are placed behind the CNC video, see drawing).
2. Make sure that CNC has been turned on for a few minutes before switching it off.
3. Remove the old battery form the CNC (see drawing).
   Disconnect the battery cable and take out the battery from the box.
4. Insert a new battery and reconnect the cable (do not leave the control unit without the new battery for more than 30 minutes).



Warning The use of a different battery may cause its explosion.
It is recommended to use original batteries type:
(A02B-0200-K102).

NOTE The old batteries must disposed of in the special containers provided.

10.2 Procedure for driving units series "Beta" (Turret)

Warning This procedure must be performed only by qualified personnel.

When the message is displayed:

2000 TURRET DRIVE BATTERY LOW

It is necessary to replace the driving unit battery which controls the turret rotation.

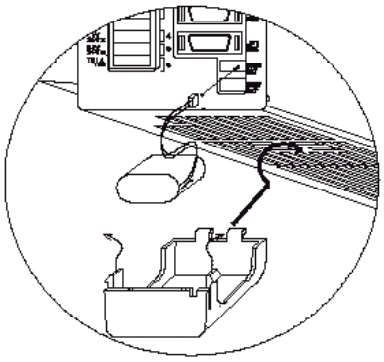
Warning If message 2000 is displayed, do not switch the numeric control off, otherwise the turret position will be lost.

Replacement procedure

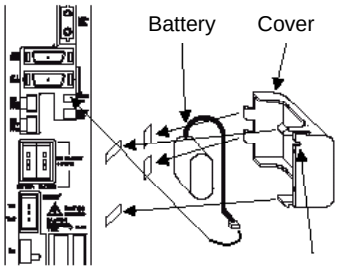
Provide a new battery (code for ordering: A06B-6093-K001).

PROCEDURE

1. Open the electric board without cutting off voltage.
2. Remove the cover of the battery which is placed at the bottom of the driving unit for type SVU20 or on a side for type SVU40/80.
   Press slightly on the side to disjoin the cover clamps.



"Beta" driving unit
type SVU-20



"Beta" driving unit
type SVU-40, SVU-80

3. Remove the old battery from the driving unit.
4. nsert the new battery and connect it to connector CX5X or CX5Y.
5. Reassemble the battery cover.

Warning The battery must be connected to the operation connectors CX5X or CX5Y.

NOTE The old batteries must disposed of in the special containers provided.

11. POWER FACTOR CORRECTION OF THE ELECTRIC TURRET TO POSITION ONE

This procedure must be performed in the following cases:

- The encoder cable of the turret has been disconnected and then reconnected.
- An alarm of the turret battery has occurred, and it has been signalled simultaneously by alarm message "**1001 TURRET DRIVE ALARM**" on CNC and by alarm message "**2000 TURRET DRIVE BATTERYLOW**".
- The electric cabin has been switched off and then on after the message "**2000 TURRET DRIVE BATTERYLOW**", without replacing the battery.

PROCEDURE

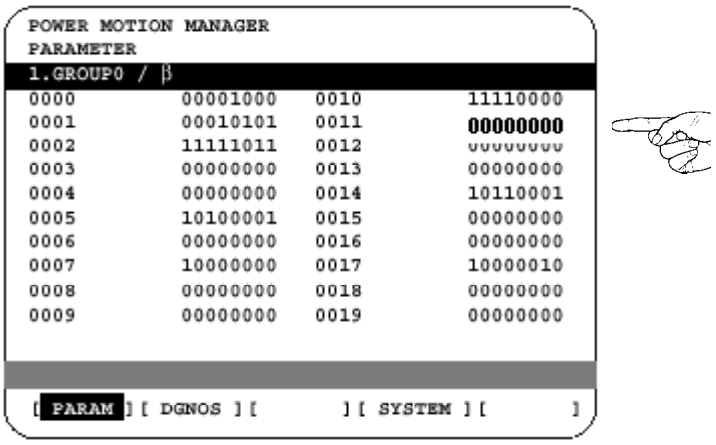
1. When switching CNC ON for the first time it is necessary to enable the parameters editing, see:

   chapter 13 and set "PARAMETER WRITE =1".

2. Select the page concerning the turret parameters **PMM** -Power motion manager displaying- chapter 12.

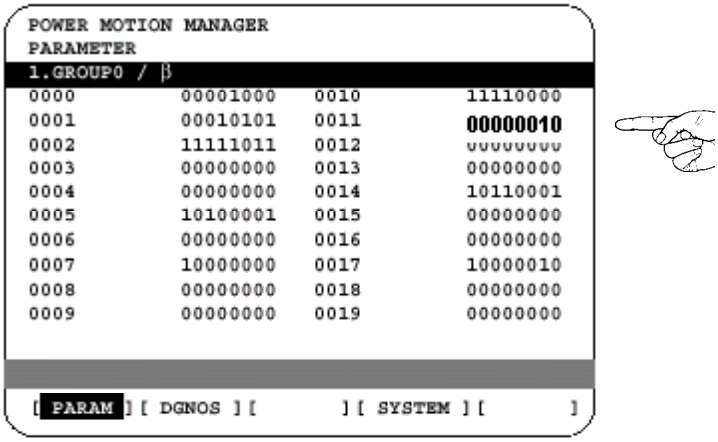
   Should the machine have two turrets, it is necessary to select the displaying of the wanted turret by following the instructions given at paragraph 12.2 -Displaying for several turrets-.

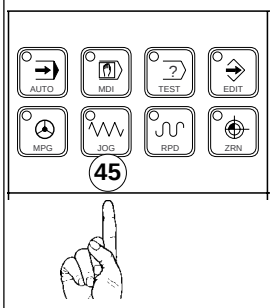
3. Select parameter **11**, write value **00000000** and press key (14) INPUT.



4. Switch off and on the CNC.

5. Select the page concerning the turret parameters **PMM**; select parameter **11**, write value **00000010** and press key (14) INPUT.





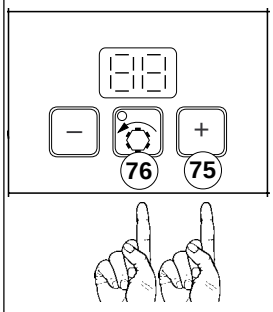
6. Switch off and on the CNC and the machine.

7. Close the door and select the manual mode by pressing the key (45) JOG "JOG".

8. When the door is closed, press the turret rotation key (76) (press it at least twice), if the turret is motorised.

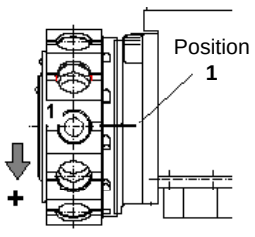
The first command orients the motor-driven tool, whereas the second one makes the turret rotate.

9. Increase the position number of one unit by key (75) + and press the turret rotation key (76) pulsing. (check that rotation and closing are regular).



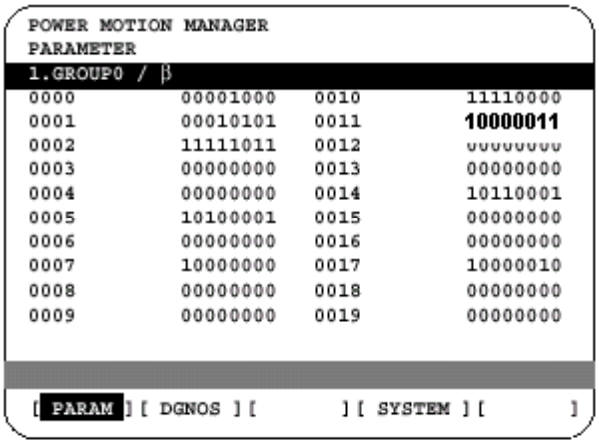
10. Step **9.** must be repeated several times, always turning towards the same direction, until reaching position **1** (**one**) of the turret.

NOTE Position **1** (**one**) must be that indicated by the specification mark on the turret head and not the one shown by the position display (73), since the position given may be not actual.



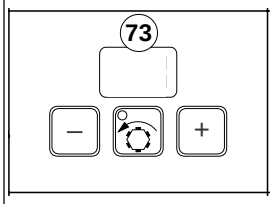
11. After reaching position **1** (**one**) select the page concerning the turret parameters **PMM**;

select parameter **11**, write value **10000011** and press key (14) INPUT .



12. Switch off and on the CNC and the machine.

NOTE If the operation has been executed in the correct way, number 1 will appear on the position display (73) .



13. End parameters editing "PARAMETER WRITE =0" by following the instructions given at paragraph 5.1 -Parameters display and setting- on page 106 of BIGLIA "Operating Manual".

12 . POWER MOTION MANAGER DISPLAYING

12.1 Displaying for one turret

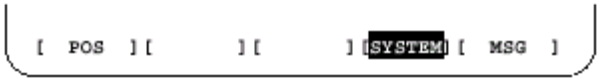
PROCEDURE

1. Select key (25) [SYSTEM] on CNC..
2. Press soft key [▷] several times until the soft key ⌈PMM⌋ appears.
3. By pressing soft key ⌈PMM⌋ the following options appears:

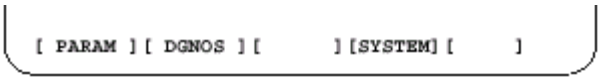
   POS : Current position displaying

   SYSTEM : System information

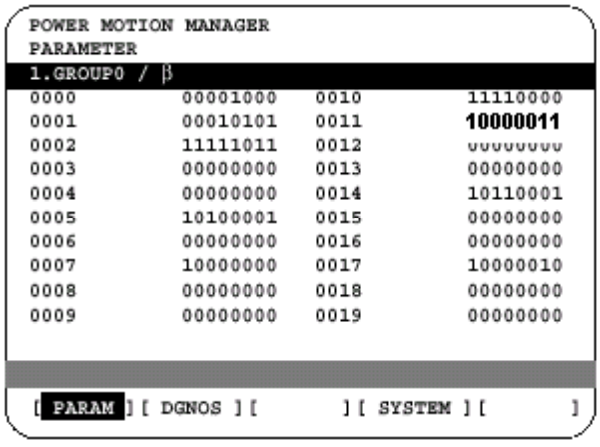
   MSG : List of alarms/messages



4. By pressing soft key ⌈SYSTEM⌋ the following video page appears:



5. Press key soft ⌈PARAM⌋ to display the following parameters list:



6. Use the keys (6) [↑] [↓] to shift the cursor on the desired parameter.

12.2 Displaying for several turrets

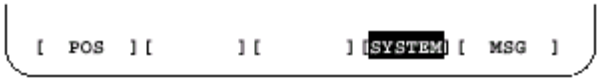
PROCEDURE

1. Select head 1 by pressing key (54) [HEAD 1].
2. Select key (25) [SYSTEM] on CNC.
3. Press soft key [▷] several times until the soft key [PMM] appears.
4. By pressing soft key [PMM] the following options appears:

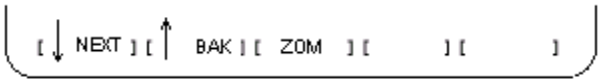
   POS : Current position displaying

   SYSTEM : System information

   MSG : List of alarms/messages



5. Press soft key [▷] + until the following video page appears and then, by using the soft keys [↓NEXT] - [↑BAK], display the group.

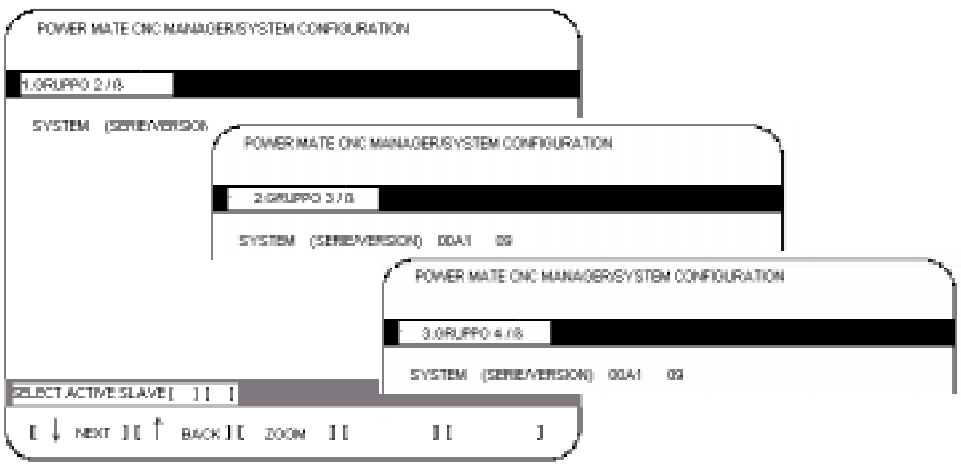


6. The following figure shows the video page, with the sequence displaying of the groups.

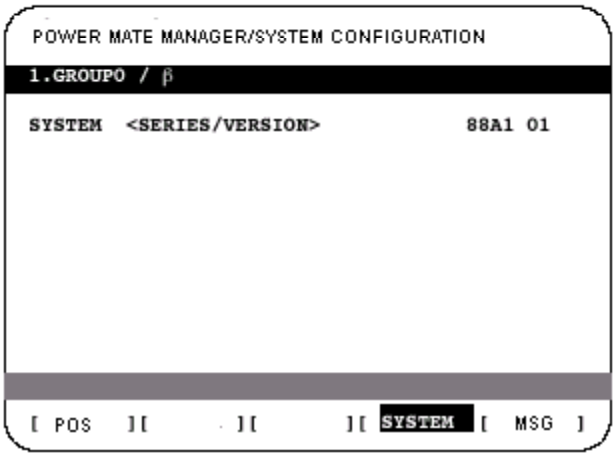
   1st GROUP : Upper turret head 1

   2nd GROUP : Lower turret head 2

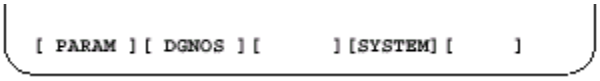
   3rd GROUP : Parts-catcher


POWER MATE CNC MANAGER/SYSTEM CONFIGURATION
1.GRUPPO 2 / 6
SYSTEM (SERIE/VERSION)
POWER MATE CNC MANAGER/SYSTEM CONFIGURATION
2.GRUPPO 3 / 6
SYSTEM (SERIE/VERSION) 00A1 03
POWER MATE CNC MANAGER/SYSTEM CONFIGURATION
3.GRUPPO 4 / 6
SYSTEM (SERIE/VERSION) 00A1 03
SELECT ACTIVE SLAVE[ ] [ ]
[↓ NEXT] [↑ BACK] [ZOOM] [ ] [ ]

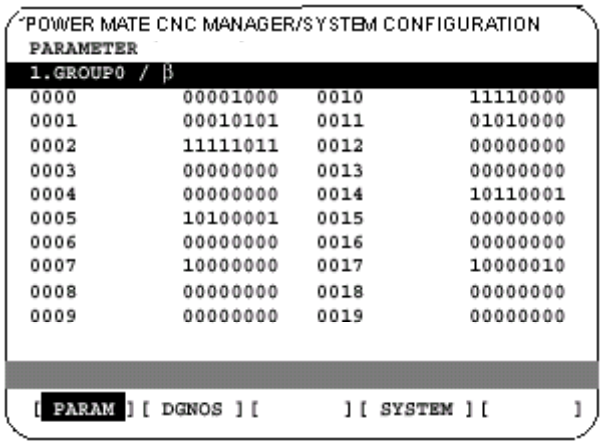
7. After choosing the group by pressing the soft key [▷] **+**, the following video page appears:



8. By pressing soft key [SYSTEM] the following video page appears:



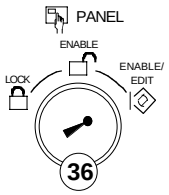
9. Press key soft [PARAM] to display the following parameters list:



10. Use the keys (6) [↑] [↓] to shift the cursor on the desired parameter.

13. PROCEDURE FOR PARAMETERS SETTING

PROCEDURE



1. Press key (41) [MDI] "MDI".
2. Set selector (36) on "ENABLE/EDIT".
3. Press key (23) [OFFSET SETTING].
4. Press soft key [PARAM].
5. Press soft key [PREPRA], the following video page appears:

   PARAMETER WRITE = 0 (0 : Disable - 1 : Enable)

6. Press page keys (7) [PAGE ↑] or [PAGE ↓] until the desired video page is displayed.

Video page example